CALIFORNIA CONSUMER POWER AND CONSERVATION FINANCING AUTHORITY

ENERGY FINANCING INDUSTRIAL DEVELOPMENT BOND PROGRAM

ELIGIBLE EQUIPMENT AND TECHNOLOGIES

1. Energy Efficiency Technologies Installed At Eligible Manufacturing Facilities

The following list should be considered illustrative and neither exhaustive nor all-inclusive. It is not intended to limit the possibilities for reducing energy costs or the amount of energy consumed per unit of production. The list is divided into two parts: generic or crosscutting technologies that have applications in many if not all industrial/manufacturing settings, and; industry specific examples of energy efficiency applied to industrial processes.

A. Cross-cutting Efficiency Technologies

Electric Motor Driven Systems

- Premium efficient motors labeled with the NEMA Premium™ label. This labeling program is a program of the National Electrical Manufacturing Association (NEMA). The U. S. Department of Energy encourages the use of these models.

- Compressed air system efficiency improvements may include one or more of the following projects:
  1. Premium efficient motor
  2. Add variable speed drives
  3. Use multiple stage compressors
  4. Resize of piping systems and repair leaks in the air distribution system.

- Pumping system retrofit projects may include the use of premium motors, variable speed drives, resized pipes, new operating controls and other upgraded auxiliary equipment.

Steam Systems

- Heat recovery and economizer equipment
- Steam distribution piping and condensate improvements: Resizing of steam and condensate piping, replacement of steam traps, replace condensate pumps and/or control valves.

Power Quality

- Uninterruptible Power System Technologies
- Ultra-capacitors
- Flow Batteries
- Low Energy Flywheels
- Super Magnetic Energy Storage (SMES)

Sensors and Controls

- A variety of control technologies that improve process management and result in reduced load and/or increased output per unit of energy consumed.

Lighting

- High efficiency lighting sources (Fluorescent, High Intensity Discharge, etc.)
- Daylighting
- Lighting Controls

General Industrial Process Applications

- High-Temperature Insulation
- Waste Heat Recovery
- Industrial Process Heat Pumps
- Freeze Concentration
- Membrane Processes
- Laser Processing
- Advanced Industrial Refrigeration
- Infrared Heating
- Microwave Heating
- Solar Industrial Process Heating
- Multistage Flash Distillation
- Multiple Effect Distillation
- Reverse Osmosis
- Mechanical and Thermal Vapor Compression
- Advanced Fume hood technologies

Energy Metering

- Time-of-Use
- Dynamic Price Sensing
- Demand-Response Metering and Communication Devices

Load Management

- Energy Management Systems
- Thermal Energy Storage

B. Industry Specific Examples of Energy Efficiency Technological Applications

Following are illustrative industry-specific technologies that reduce energy consumption and cost.

Clean room and Laboratory Technologies
- Hoods, fans, filters, etc.

Agriculture and Food Processing
- Ozone based Disinfectant technologies
- Membrane technologies
- Infrared technologies

Aluminum
- Waste recovery systems
- Oxygen enhanced combustion
- Recycling of Aluminum Dross

Chemicals
- Ultrasonic tank cleaning
- Variable frequency microwave furnaces
- Concurrent distillation
- Recycled plastics used for durable goods manufacture
- Advanced fume hood technologies

Electronics
- Sulfur trioxide cleaning of semiconductor wafers

Glass
- Advanced temperature measurement systems
- Oxy-fuel firing

Metal Casting
- Laser-based laminated object manufacturing

Petroleum
- Absorption heat pump/refrigeration
- Biphase rotary separator turbine
- Catalytic distillation
- Robotic inspection of storage tanks

2. Distributed Clean Energy Generation Technologies (Both Renewable and Non-Renewable) Installed at Eligible Manufacturing Facilities

Eligible equipment should provide power generation on site that provides

- reliable quality power,
- power generated from on-site renewable energy resource,
- back-up (emergency) power or interruptible power for sensitive electronic equipment, and/or
- an opportunity to capture waste heat or loss for other production processes.

Some of the available technologies are:

- Micro turbines in combined heat and power mode
- Fuel Cells (using a renewable or non-renewable fuel source)
- Photovoltaic panels (see also renewable energy technologies)
- On-site wind generation (see also renewable energy technologies)
- Biogas and landfill gas generation
- Geothermal energy (when available on-site)

A. All Distributed Generation Technologies

To help maintain minimum standards of quality, an eligible project should offer the following, whenever available:

- A minimum of a full five year warranty on the entire generating system if installed by a licensed contractor, or a limited five year warranty if installed by the owner;
- Installation by an appropriately licensed contractor, or the system owner, and in compliance with appropriate electrical codes; and
- Key system components, or the entire generating system, are certified to meet certain established standards, where available.

The loan recipient must attest in writing that the above conditions will be met in order to be eligible for the loan.

B. Non-Renewable Clean On-Site Energy Systems

Examples include fuel cells, microturbines, and combined heat and power systems. All distributed generation systems using a non-renewable fuel source should:

- Meet the California Air Resource Board air quality rules for distributed generation systems[1]
- Be installed in a combined heat and power (CHP) application

[1] The technology manufactured, if produced or assembled in the manufacturing site as an entire system, must comply with all applicable distributed generation emissions certification standards and minimum CHP system efficiency requirements as adopted by the California Air Resources Board (CARB) for DG CHP systems. Until or unless such standards are officially in place, the following emissions (lbs/MWh) requirements apply: NO_x: 0.50, CO: 6, and VOCs: 1.

C. Renewable Energy Systems

Renewable energy is legally defined in California as production of power from a source other than a conventional power source. The following specific definitions of electricity generating systems apply to the IDB energy finance program:

- Photovoltaics - the direct conversion of sunlight to electricity;
- Solar Thermal Electric - the conversion of sunlight to heat and its concentration and use to power a generator to produce electricity;
- Fuel Cells Using a Renewable Fuel - the conversion of sewer gas, land fill gas or other renewable sources of hydrogen or hydrogen rich gases into electricity by a direct non-combustion chemical process (hydrogen derived from fossil fuels is not renewable);
- Small Wind Turbines - small electricity producing, wind-driven generating systems with a rated output of 50 kilowatts or less.
- Large Wind Turbines – large electricity producing, wind-driven generating systems with a rated output of greater than 50 kilowatts.
- Biogas – the combustion for production of electricity of the gas produced by anaerobic digestion of organic wastes
- Land-fill gas – the combustion for production of electricity of the gas produced by the breakdown of organic matter in a landfill
- Biomass – the combustion for production of electricity of organic waste products
- Geothermal – natural heat from within the earth, captured for the production of electricity

Specific equipment that would be eligible for a loan would be any equipment that is necessary for the production or storage of electricity from the system, if that equipment meets the applicable certification requirements. This includes primary generation equipment, power conditioning equipment (inverters), batteries, wiring, fuel-processing, handling, and gasification equipment, wiring, and generating system support structures necessary to place the generating system on a piece of ground or on a structure. Costs of any underlying or surrounding structure are not included.

As examples, the following costs would be eligible for a loan for specific systems:

Photovoltaics: The photovoltaic cells, modules, mounting or tracking structures, wiring, inverters, foundation (for free-standing systems), batteries (if any), and utility required interconnection equipment.

Solar Thermal Electric: The concentrating and collecting apparatus, tracking and mounting structures, wiring, thermal engines or devices for the conversion of heat to mechanical energy, generator, inverter, support structure and foundation (for free-standing systems), batteries (if any) and utility required interconnection equipment.

Fuel Cells: The renewable gas pre-treatment equipment (but not the gas collection or production equipment), fuel processor, cell stacks, inverter and power conditioning equipment, cooling equipment, foundation (for free-standing systems), batteries (if any) and utility required interconnection equipment.

Small Wind: The wind turbine, tower, wiring, inverter, foundation, batteries (if any) and utility required interconnection equipment.

3. Manufacture of Renewable Energy and Clean Distributed Generation Technology Components or Systems

Manufacturers of any of the components in the clean distributed generation list (Section 2 B above) or renewable energy list (Section 2C above) should be eligible for loans for new and or expanded eligible manufacturing facilities in California.

For the purposes of this program, manufacturing of renewable systems and components includes renewable energy system integrators, where basic components are assembled in a manufacturing facility for shipment to installation sites. Renewable energy system installers, where the 'manufacturing' is done at a customer site, should not qualify, not even for warehousing space.

Manufacturers of equipment that could be used either with renewable or non-renewable fuels, such as fuel cell manufacturers or microturbines, may qualify if the systems and components manufactured meet the requirements stated in Section 2B above.